



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,055	03/23/2001	Yuji Takaoka	09792909-4794	5918

26263 7590 05/21/2003

SONNENSCHN NATH & ROSENTHAL
P.O. BOX 061080
WACKER DRIVE STATION
CHICAGO, IL 60606-1080

EXAMINER

BEREZNY, NEMA O

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,055

Applicant(s)

TAKAOKA

Examiner

Nema O Berezny

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4-3-03 has been entered.

Specification

Cancellation of claims 13-16 in Amendment B, filed 4-3-03 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by

Eichelberger (6,159,767). Eichelberger discloses a semiconductor device, comprising:

Art Unit: 2813

a plurality of semiconductor chips (Fig.1 el.12) mounted on an outer surface of a substrate (el.14); a single layer insulation film (el.16) provided on said substrate, wherein a top surface and side surfaces of said chips are encrusted in said insulation film (Fig.1); wiring (el.18) provided on said insulation film, wherein said wiring is connected to said chips through a connection hole (col.3 lines 25-41) formed on said insulation film; an upper layer insulation film (el.20) provided on said insulation film that covers said wiring; and an electrode (no #) provided on said upper layer insulation film that is connected to said wiring through a connection hole formed on said upper layer insulation film (Fig.1; col.3 lines 25-41). Eichelberger also discloses wiring that is arranged such that a shared circuit exists between two chips of said plurality of chips, wherein said shared circuit is an input-output interface for an external equipment (Fig.1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger (6,159,767). Eichelberger discloses a semiconductor device, comprising: a single layer insulation layer (Fig.1 el.16) supporting a plurality of semiconductor chips (el.12), wherein a top surface and at least a portion of side surfaces of said chips are encrusted in said insulation layer (Fig.1); wiring (el.18) provided on said insulation layer

Art Unit: 2813

that is connected to each chip through a connection hole formed on said insulation layer (col.3 lines 25-41); an upper layer insulation film (el.20) provided on said insulation layer that covers said wiring; and an electrode (no #) provided on said upper layer insulation film that is connected to said wiring through a connection hole formed on said upper layer insulation film (col.3 lines 25-41). Eichelberger also discloses wiring that is arranged such that a shared circuit exists between two chips of said plurality of chips, and a shared circuit that is an input-output interface circuit for an external equipment (Fig.1).

Eichelberger does not disclose that a surface opposite to the top surface of said chips is exposed. However, Eichelberger discloses other embodiments similar to Fig.1 in which the substrate (Fig.5a el.120) upon which the chips are mounted is a carrier substrate connected to the insulation layer and chips by a release layer (Figs.5a-5f el.122, 142). A similar layer to the release layer is shown in Fig.1, but is not described. It would have been obvious to a person skilled in the art at the time of the invention to use a release layer with the embodiment of Fig.1, which would leave the back sides of said chips exposed. This would allow the back side of the chips to be directly attached to a heat sink for removal of heat from the chips (col.11 lines 50-53).

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger as applied to claims 1-4 above, and further in view of Sharma (5,552,633). Eichelberger does not disclose a shared power supply circuit or a shared electrostatic protection circuit. However, Sharma discloses a multi-chip module in which shared

Art Unit: 2813

circuitry for power and electrostatic protection is provided (col.8 lines 3-21). Therefore, it would have been obvious to a person skilled in the art at the time of the invention to use the shared power and electrostatic protection circuitry of Sharma with the semiconductor device of Eichelberger in order to couple power to a chip through a low ohmic resistance path (Sharma – col.8 lines 7-13), and to provide electrostatic discharge protection to the integrated device through the ground terminal (col.8 lines 13-21).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger as applied to claims 7-10 above, and further in view of Sudo (5,475,264). Eichelberger does not disclose a shared power supply circuit. Sudo discloses a shared power supply circuit (col.3 lines 35-46) for a multi-chip module. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the shared power supply circuit of Sudo with the semiconductor device of Eichelberger in order to supply adequate power to either chip when needed, without requiring both chips to be high power chips.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger as applied to claims 7-10 above, and further in view of Sharma (5,552,633). Eichelberger does not disclose a shared electrostatic protection circuit. However, Sharma discloses a multi-chip module in which shared circuitry for electrostatic protection is provided (col.8 lines 17-21). Therefore, it would have been

Art Unit: 2813

obvious to a person skilled in the art at the time of the invention to use the shared electrostatic protection circuitry of Sharma with the semiconductor device of Eichelberger in order to provide electrostatic discharge protection to the integrated device through the ground terminal (col.8 lines 13-21).

Response to Arguments

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

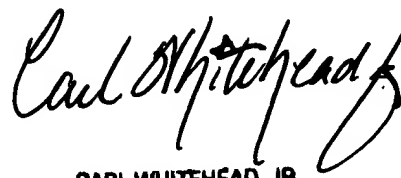
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nema O Berezny whose telephone number is (703) 305-3445. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Art Unit: 2813

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

NB
May 17, 2003

A handwritten signature in black ink, reading "Carl Whitehead, Jr." with a stylized flourish at the end.

CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800